

GOVT. DIGVIJAY AUTONOMOUS P.G. COLLEGE

RAJNANDGAON (C.G.)



FYUP

(Four Year Undergraduate Programme)

Course Curriculum

**FOR
B.Sc. BOTANY**

**Semester III and Semester IV
SESSION – 2025-26**

Approved by

Central Board Of Studies & Board Of Studies

DEPARTMENT OF BOTANY

Govt. Digvijay Autonomous P.G. College, Rajnandgaon, C.G.
Bachelor of Science (B.Sc.) Four Years UG Programme (FYUP)

Botany

2025-26

Year	Sem.	Course Type	Course Title	Credit	IA	ESE	Max Marks
First Year	I Sem.	DSC-01	Elementary Botany	3+0+0	30	70	100
		DSC-01-LAB	Elementary Botany – LAB	0+0+1	15	35	50
		GE-01	Elementary Botany	3+0+0	30	70	100
		GE-01-LAB	Elementary Botany – LAB	0+0+1	15	35	50
	II Sem.	DSC-02	Microbes and Thallophyta	3+0+0	30	70	100
		DSC-02-LAB	Microbes and Thallophyta - LAB	0+0+1	15	35	50
		GE-02	Microbes and Thallophyta	3+0+0	30	70	100
		GE-02-LAB	Microbes and Thallophyta - LAB	0+0+1	15	35	50
		SEC-01	Gardening and Floriculture	0+0+2	10	40	50
Second Year	III Sem.	DSC-03	Archegoniate and Fossils	3+0+0	30	70	100
		DSC-03-LAB	Archegoniate and Fossils – LAB	0+0+1	15	35	50
		DSE-01	Natural resources and management	3+0+0	30	70	100
		DSE-01-LAB	Natural resources and management- LAB	0+0+1	15	35	50
		VAC-01	Herbal Plants & Human Health	2+0+0	10	40	50
	IV Sem.	DSC-IV	Angiosperms	3+0+0	30	70	100
		DSC-IV-LAB	Angiosperms- LAB	0+0+1	15	35	50
		DSE-02	Microbiology and Phytopathology	3+0+0	30	70	100
		DSE-02-LAB	Microbiology and Phytopathology- LAB	0+0+1	15	35	50
		SEC-02	Flower Decoration	0+0+2	10	40	50

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Third Year	V Sem.	DSC-05	Plant Physiology	3+0+0	20	80	100
		DSC-05-LAB	Plant Physiology- LAB	0+0+1	10	40	50
		DSE-03	Plant Metabolism	3+0+0	20	80	100
		DSE-03-LAB	Plant Metabolism- LAB	0+0+1	10	40	50
		DSE-04	Plant Diseases	3+0+0	20	80	100
		DSE-04-LAB	Plant Diseases-LAB	0+0+1	10	40	50
		SEC-03	Biofertilizer and Biopesticides	0+0+2	10	40	50
	VI Sem.	DSC-06	Plant Pathology	3+0+0	20	80	100
		DSC-06-LAB	Plant Pathology-LAB	0+0+1	10	40	50
		DSE-05	Molecular Biology and Plant Biotechnology	3+0+0	20	80	100
		DSE-05-LAB	Molecular Biology and Plant Biotechnology-LAB	0+0+1	10	40	50
		DSE-06	Economic Botany	3+0+0	20	80	100
		DSE-06-LAB	Economic Botany-LAB	0+0+1	10	40	50
		SEC-04	Mushroom Culture Technology-Project	0+0+2	10	40	50
Fourth Year Bachel or of Honors	VII Sem.	DSC-07	Ecology and Phytogeography	3+0+0	20	80	100
		DSC-07-LAB	Ecology and Phytogeography-LAB	0+0+1	10	40	50
		DSE-07	Instrumentation and Biochemical Technology	3+0+0	20	80	100
		DSE-07-LAB	Instrumentation and Biochemical Technology-LAB	0+0+1	10	40	50
		DSE-08	Biosystematics and Biodiversity	3+0+0	20	80	100
		DSE-08-LAB	Biosystematics and Biodiversity-LAB	0+0+1	10	40	50
		DSE-09	Plant Breeding and Seed Technology	3+0+0	20	80	100
		DSE-09-LAB	Plant Breeding and Seed Technology-LAB	0+0+1	10	40	50
		GE-	Growth and Stress Physiology	3+0+0	20	80	100
		GE-LAB	Growth and Stress Physiology-LAB	0+0+1	10	40	50
	VIII Sem	DSC-08	Molecular Biology and Biostatistics	3+0+0	20	80	100
		DSC-08-	Molecular Biology and	0+0+1	10	40	50

Fourth Year Bachelor of Honors with Research		LAB	Biostatistics- LAB				
		DSE-10	Plant Biotechnology and Crop Improvement	3+0+0	20	80	100
		DSE-10-LAB	Plant Biotechnology and Crop Improvement-LAB	0+0+1	10	40	50
		DSE-11	Applied Botany and Intellectual Property Right (IPR)	3+0+0	20	80	100
		DSE-11-LAB	Applied Botany and Intellectual Property Right (IPR)-LAB	0+0+1	10	40	50
		DSE-12	Biochemistry and Enzymology	3+0+0	20	80	100
		DSE-12-LAB	Biochemistry and Enzymology-LAB	0+0+1	10	40	50
		DSE-13	Bioinformatics and Genetic Technology	3+0+0	20	80	100
		DSE-13-LAB	Bioinformatics and Genetic Technology-LAB	0+0+1	10	40	50
	VII Sem.	DSC-07	Ecology and Phytogeography	3+0+0	20	80	100
		DSC-07-LAB	Ecology and Phytogeography-LAB	0+0+1	10	40	50
		DSE-07	Research Methodology and Ethics	4+0+0	20	80	100
		DSE-08	Biosystematics and Biodiversity	3+0+0	20	80	100
		DSE-08-LAB	Biosystematics and Biodiversity-LAB	0+0+1	10	40	50
		DSE-09	Plant Breeding and Seed Technology	3+0+0	20	80	100
		DSE-09-LAB	Plant Breeding and Seed Technology-LAB	0+0+1	10	40	50
		GE-	Growth and Stress Physiology	3+0+0	20	80	100
		GE-LAB	Growth and Stress Physiology-LAB	0+0+1	10	40	50
	VIII Sem	DSC-08	Molecular Biology and Biostatistics	3+0+0	20	80	100
		DSC-08-LAB	Molecular Biology and Biostatistics- LAB	0+0+1	10	40	50
		DSE-10	Plant Biotechnology and Crop Improvement	3+0+0	20	80	100
		DSE-10-LAB	Plant Biotechnology and Crop Improvement-LAB	0+0+1	10	40	50
		Research Project/ Dissertation		12			

FOUR YEAR UNDERGRADUATE PROGRAM (NEP-2020)

Program: Bachelor in Life Science (2024 -28)

DISCIPLINE – BOTANY

Session – 2024 -25

DSC -01 to 08		DSE -01 to 12	
Code	Title	Code	Title
BOSC -01T	Elementary Botany	BOSE -01T	Natural resources and management
BOSC -01P	Lab. Course -01 (Elementary Botany)	BOSE -01P	Lab. Course -01 (Natural resources and management)
BOSC -02T	Microbes and Thallophyta	BOSE -02T	Microbiology and Phytopathology
BOSC -02P	Lab. Course -02 (Microbes and Thallophyta)	BOSE -02P	Lab. Course -02 (Microbiology and Phytopathology)
BOSC -03T	Archegoniate and Fossils	BOSE -03T	Phytapaleontology and Evolutionary Botany
BOSC -03P	Lab. Course-03 (Archegoniate and Fossils)	BOSE -03P	Lab. Course -03 (Phytapaleontology and Evolutionary Botany)
BOSC -04T	Angiosperms	BOSE -04T	Ethnobotany and Medicinal plants
BOSC -04P	Lab. Course - 04 (Angiosperms)	BOSE -04P	Lab. Course-04 (Ethnobotany & Medicinal plants)
BOSC -05T	Cytology and Genetics	BOSE -05T	Biosystematics and Biodiversity
BOSC -05P	Lab. Course -05 (Cytology and Genetics)	BOSE -05P	Lab. Course -05 (Biosystematics and Biodiversity)
BOSC -06T	Plant Physiology and Economic Botany	BOSE -06T	Plant breeding and Seed technology
BOSC -06P	Lab. Course -06 (Plant Physiology and Economic Botany)	BOSE -06P	Lab. Course -06 (Plant breeding and Seed technology)
BOSC -07T	Ecology and Phytogeography	BOSE -07T	Instrumentation and biochemical technology
BOSC -07P	Lab. Course -07 (Ecology and Phytogeography)	BOSE -07P	Lab. Course -07 (Instrumentation and biochemical technology)
BOSC -08T	Molecular biology and Biostatistics	BOSE -08T	Growth and Stress Physiology
BOSC -08P	Lab. Course-08 (Molecular biology and Biostatistics)	BOSE -08P	Lab. Course -08 (Growth and Stress Physiology)
		BOSE -09T	Plant biotechnology and crop improvement
		BOSE -09P	Lab. Course -09 (Plant biotechnology and crop improvement)
		BOSE -10T	Applied Botany and Intellectual property right (IPR)
		BOSE -10P	Lab. Course -10 (Applied Botany and IPR)
		BOSE -11T	Biochemistry and Enzymology
		BOSE -11P	Lab. Course -11 (Biochemistry and Enzymology)
		BOSE -12T	Bioinformatics and Gene Technology
		BOSE -12P	Lab. Course-12 (Bioinformatics & Gene Technology)
GE -01 & 02		VAC	
BOGE -01T	Elementary Botany	BOVAC-01	Herbal Plant & Human Health
BOGE -01P	Lab. Course -01 (Elementary Botany)		SEC
BOGE -02T	Microbes and Thallophyta	BOSEC-01	Gardening and Floriculture
BOGE -02P	Lab. Course -02 (Microbes and Thallophyta)		

Program Outcomes (PO):

1. Demonstrate and apply the fundamental knowledge of the basic principles of major fields of biology
2. Apply knowledge to solve the issues related to plant sciences with the help of computer technology
3. Apply knowledge for conservation of endemic and endangered plant species

Program Specific Outcomes (PSO):

1. Collaborate effectively on team-oriented projects in the field of life sciences.
2. Communicate scientific information in a clear and concise manner both orally and in writing
3. Explain Biodiversity, climate change and plant pathology.
4. Apply Biotechnology, Ecology, Genetics and Plant breeding techniques in plant sciences
5. Apply knowledge of Medicinal and Economic botany in day to day life.
6. Apply the knowledge to develop the sustainable and eco-friendly technology.

① R. Sivas
② Suresh
③ Mr. Suresh
④ Suresh
⑤ Suresh

⑥ Suresh
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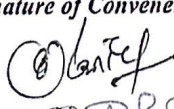
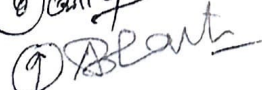
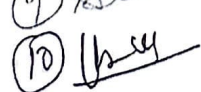
FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)

DEPARTMENT OF BOTANY

COURSE CURRICULUM

PART- A: Introduction			
Program: Bachelor in Life Sciences (Diploma / Degree/Honors)		Semester - III	Session: ²⁰²⁵⁻²⁶ 2024-2025
1	Course Code	BOSC-03 T	
2	Course Title	Archegoniate and Fossils	
3	Course Type	Discipline Specific course (DSC)	
4	Pre-requisite (if, any)	As per program	
5	Course Learning Outcomes (CLO)	> students will be familiar with amphibians and reptiles plants > progressive evolution in plants > relics of past plants > diversity in plants > development of seeds.	
6	Credit Value	3 Credits	Credit = 15 Hours - learning & Observation
7	Total Marks	Max. Marks: 100	Min Passing Marks: 40
PART -B: Content of the Course			
Total No. of Teaching-learning Periods (01 Hr. per period) - 45 Periods (45 Hours)			
Unit	Topics (Course contents)		No. of Period
I	Bryophyta: Morphology, structure, reproduction and life history, distribution, classification, evolution of gametophytes and sterilization of sporogenous tissue. General account of- Riccia, Marchantia, Anthoceros and Funaria , Economic and ecological importance of bryophytes.		12
II	Pteridophytes: Morphology, anatomy and reproduction, classification, evolution of stele, heterospory, telome theory and origin of seed habit, general account and life history of of Psilotum, Lycopodium, Sellaginella, Equisetum Pteris, Marsilea		11
III	Gymnosperm : Characteristics of Gymnosperms, the vessel - less & fruitless seed plants, Classification of Gymnosperm; Polyembryony in Gymnosperms and its role; Distribution of Gymnosperm in India; Economic importance of Gymnosperm. General account of Cycas, Pinus, Gnetum Concepts of living fossil (Cycas & Ginkgo); Angiospermic characters of Gnetum.		11
IV	Fossil: Fossil and fossilization, types of fossils Geological time table Brief account of the families of Pteridospermales -Rhynia, Calamites. General Account and Affinities - Cycadeoidales Pentoxylales and Cordaitales		11
Keywords Archegonia, seedless, heterospory, fossils			
Signature of Convener & Members (CBoS) :			

- ① R. B. B. B.
- ② R. B. B. B.
- ③ R. B. B. B.
- ④ R. B. B. B.
- ⑤ R. B. B. B.
- ⑥ R. B. B. B.
- ⑦ R. B. B. B.


Text Books, Reference Books and Others

Text Books Recommended –

- Text Books Recommended—**

- ### Online Resources—

- ### Online Resources—

- <https://study.com/learn/lesson/bryophytes-characteristics-and-general-biology.html>
- [https://bio.libretexts.org/Bookshelves/Introductory_and_General_Biology/Book%3A_General_Biology_\(Boundless\)/26%3A_Seed_Plants/26.02%3A_Gymnosperms/26.2A%3A_Characteristics_of_Gymnosperms](https://bio.libretexts.org/Bookshelves/Introductory_and_General_Biology/Book%3A_General_Biology_(Boundless)/26%3A_Seed_Plants/26.02%3A_Gymnosperms/26.2A%3A_Characteristics_of_Gymnosperms)
- [https://www.google.com/search?q=fossils&scasv=09379ecd0b6efd91&rlz=1C1CHBD_enIN10911N1093&ssrf=ACQVn09vltzqRGwbydx-plsOZFXXGRnmfcw%3A1713546819943&ei=Q6YiZvefOde5vr0PtMuvqAg&og=fossils&gs_l=EGxnd3M1d2l6LXNlcNciBzZvc3NpbHMqAggAMg0QABiABixAxDGIoFMgoQLhiABhDGIoFMgoUOABiABDIFEAAYgAqVBRAGIAEMgoQA BiABhDGIoFMgoUOABiABDIFEAAYgAqVBRAGIAEMgoQA BiABEjhKIAAWPIUCAB4AJABAjgBwKgAYcLqgEFMC41LjK4AQHIAQD4AQGYAggAukLwglKECMYgAQYJxiKBCiCBBaJGJCiAhEQLhiABBiXAxjRAxiDARiHAcICCBAAGIAEGLEDwglKEAAYgAQYFbiHApGDAJIHBTauMv40aFswW&scient=wws-wiz-serp](https://www.google.com/search?q=fossils&scasv=09379ecd0b6efd91&rlz=1C1CHBD_enIN10911N1093&ssrf=ACQVn09vltzqRGwbydx-plsOZFXXGRnmfcw%3A1713546819943&ei=Q6YiZvefOde5vr0PtMuvqAg&og=fossils&gs_l=EGxnd3M1d2l6LXNlcNciBzZvc3NpbHMqAggAMg0QABiABixAxDGIoFMgoQLhiABhDGIoFMgoQABiABDIFEAAYgAqVBRAGIAEMgoQA BiABhDGIoFMgoUOABiABDIFEAAYgAqVBRAGIAEMgoQA BiABEjhKIAAWPIUCAB4AJABAjgBwKgAYcLqgEFMC41LjK4AQHIAQD4AQGYAggAukLwglKECMYgAQYJxiKBCiCBBaJGJCiAhEQLhiABBiXAxjRAxiDARiHAcICCBAAGIAEGLEDwglKEAAYgAQYFbiHApGDAJIHBTauMv40aFswW&scient=wws-wiz-serp)
- https://www.google.com/search?q=fossils&scasv=09379ecd0b6efd91&rlz=1C1CHBD_enIN10911N1093&ssrf=ACQVn09vltzqRGwbydx-plsOZFXXGRnmfcw%3A1713546819943&ei=Q6YiZvefOde5vr0PtMuvqAg&og=fossils&gs_l=EGxnd3M1d2l6LXNlcNciBzZvc3NpbHMqAggAMg0QABiABixAxDGIoFMgoQLhiABhDGIoFMgoUOABiABDIFEAAYgAqVBRAGIAEMgoQA BiABhDGIoFMgoUOABiABDIFEAAYgAqVBRAGIAEMgoQA BiABEjhKIAAWPIUCAB4AJABAjgBwKgAYcLqgEFMC41LjK4AQHIAQD4AQGYAggAukLwglKECMYgAQYJxiKBCiCBBaJGJCiAhEQLhiABBiXAxjRAxiDARiHAcICCBAAGIAEGLEDwglKEAAYgAQYFbiHApGDAJIHBTauMv40aFswW&scient=wws-wiz-serp
- [https://www.google.com/search?q=pteridophytes&scasv=09379ecd0b6efd91&rlz=1C1CHBD_enIN10911N1093&ssrf=ACQVn0-V0lp75QZG3bdfKrltX0BcPdZvA%3A1713546628592&ei=hKUizuvFI9q-juMPkr-DkAY&og=pter&gs_l=EGxnd3M1d2l6LXNlcNciBzZvc3NpbHMqAggAMg0QABiABixAxDGIoFMgoQABiABhDGIoFMgoQABiABhDGIoFMgoUOABiABDIFEAAYgAqYQxiKBTINEC4YgAQYsQMYQxiKBTIFEC4YgAqYChAAGIAEGEMYigUyChAAGIAEGEMYigVi1ihQAFixCuAAeACQAQCYAfQBoAGiBqoBBTAuMi4yuAEbVAAE-AEBmAIeOALgBsICChAIGIAEGGCcYigXCAGQQIsgnwglKEC4YgAQYQxiKbZgDAJIHBTauMi4voAFOSg&scient=gws-wiz-serp](https://www.google.com/search?q=pteridophytes&scasv=09379ecd0b6efd91&rlz=1C1CHBD_enIN10911N1093&ssrf=ACQVn0-V0lp75QZG3bdfKrltX0BcPdZvA%3A1713546628592&ei=hKUizuvFI9q-juMPkr-DkAY&og=pter&gs_l=EGxnd3M1d2l6LXNlcNciBzZvc3NpbHMqAggAMg0QABiABixAxDGIoFMgoQABiABhDGIoFMgoQABiABhDGIoFMgoQABiABhDGIoFMgoUOABiABDIFEAAYgAqYQxiKBTINEC4YgAQYsQMYQxiKBTIFEC4YgAqYChAAGIAEGEMYigUyChAAGIAEGEMYigVi1ihQAFixCuAAeACQAQCYAfQBoAGiBqoBBTAuMi4yuAEbVAAE-AEBmAIeOALgBsICChAIGIAEGGCcYigXCAGQQIsgnwglKEC4YgAQYQxiKbZgDAJIHBTauMi4voAFOSg&scient=gws-wiz-serp)
- [https://bio.libretexts.org/Bookshelves/Introductory_and_General_Biology/Book%3A_General_Biology_\(Boundless\)/26%3A_Seed_Plants/26.02%3A_Gymnosperms/26.2A%3A_Characteristics_of_Gymnosperms](https://bio.libretexts.org/Bookshelves/Introductory_and_General_Biology/Book%3A_General_Biology_(Boundless)/26%3A_Seed_Plants/26.02%3A_Gymnosperms/26.2A%3A_Characteristics_of_Gymnosperms)

Suggested Continuous Evaluation Methods:

Continuous Internal Assessment (CIA): 30 Marks

Continuous Internal	Internal Test / Quiz-(2): 20
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Internal Test / Quiz-(2):	20 +20
Assignment / Seminar -	10
Total Marks -	30

Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 30 Marks

Two section – A & B

Section A: Q1. Objective – 10 x 1 = 10 Mark; Q2. Short answer type- 5 x 4 = 20 Marks
Section B: Descriptive answer type qts., 1 out of 2 from each unit – 4 x 10 = 40 Marks

Name and Signature of Convener & Members of CBoS:

① Rishwar
② kunda
③ Indi
④ Indi
⑤ Indi
⑥ Indi
⑦ Indi
⑧ Indi

FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)

DEPARTMENT OF BOTANY

COURSE CURRICULUM

PART- A: Introduction			
Program: Bachelor in Life Sciences (Diploma / Degree/Honors)		Semester - III	Session: ^{2025 - 26} 2024-2025
1	Course Code	BOSC-03 P	
2	Course Title	Lab. Course-03 (Archegoniate and Fossils)	
3	Course Type	Laboratory course	
4	Pre-requisite (if, any)	As per program	
5	Course Learning Outcomes (CLO)	At the end of the course students will be familiar > with amphibians and reptiles plants > progressive evolution in plants > relics of past plants > diversity in plants > Development of seeds.	
6	Credit Value	1 Credits	Credit =30 Hours Laboratory or Field learning/Training
7	Total Marks	Max. Marks: 50	Min Passing Marks: 20
PART -B: Content of the Course			
Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)			
Module	Topics (Course contents)		No. of Period
Lab./Field Training/ Experiment Contents of Course	Bryophyta: Comparative study of the anatomy of vegetative and reproductive parts of <i>Marchantia</i> , <i>Pellia</i> , <i>Anthoceros</i> , <i>Notothylus</i> , <i>Funaria</i> , <i>Polytrichum</i> . Pteridophyta: Comparative study of the anatomy of vegetative and reproductive parts of <i>Psilotum</i> , <i>Lycopodium</i> , <i>Selaginella</i> , <i>Equisetum</i> , <i>Gleichenia</i> , <i>Pteris</i> , <i>Ophioglossum</i> , <i>Isoetes</i> . Gymnosperms: Comparative study of the anatomy of vegetative and reproductive parts of <i>Cycas</i> , <i>Ginkgo</i> , <i>Cedrus</i> , <i>Abies</i> , <i>Picea</i> , <i>Cupressus</i> , <i>Araucaria</i> , <i>Cryptomeria</i> , <i>Taxodium</i> , <i>Podocarpus</i> , <i>Agathis</i> , <i>Taxus</i> , <i>Ephedra</i> and <i>Gnetum</i> . ▪ Collection of various gymnospermic plant materials. ▪ Field work – as far practicable conveniently. Fossil: Study of important fossil gymnosperms from prepared photographs, slides and specimens.		30
Keywords	Archegonia, venter, bryophytes, pteridophytes		

Signature of Convener & Members (CBoS) :

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PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

1. The Practical Fossil Finder (Practical Handbook) Hardcover – 1 October 1991 by Steve Parker (Author) Publishers Facts On File Inc
2. Practical Botany (Part I) ISBN #:81-301-0008-8 Sunil D Purohit, Gotam K Kukda & Anamika Singhvi Edition:2013 Apex Publishing House Durga Nursery Road, Udaipur, Rajasthan (bilingual).
3. Pandey S.K. (2012). Quick Concept of Botany. Publisher LAP LAMBERT Academic Publishing GmbH & Co. KG, Germany (ISBN: 978-3-8484-3104-5).
4. Dubey, R. C. and Maheshwari. D.K. 2012. Practical Microbiology, S. Chand & Company, Pvt. Ltd., New Delhi.
5. Pandey. B.P. 2014 Modern Practical Botany, (Vol-I) S. Chand and Company Pvt. Ltd., New Delhi.

Reference Books Recommended –

1. Principles of Paleontology Edition 3 Paperback–1 January 2006 by Arnold Miller, Michael Foote Publishers - W.H.Freeman & Co Lt

Online Resources–

> e-Resources / e-books and e-learning portals

- > www.swayam.ac.in
- > www.ignou.ac.in
- > www.egyankosh.ac.in
- > www.iitm.ac.in
- > www.eskillindia.org
- > www.eskiksha.mp.gov.in
- > www.vlab.co.in
- > www.internshala.com
- > www.ndl.iitkgp.ac.in

Online Resources–

> e-Resources / e-books and e-learning portals

1. <https://efaidnbmnnnibpcaipcgclefindinkaj/https://egyankosh.ac.in/bitstream/123456789/69611/1/Unit-9.pdf>
2. <https://www.encyclopedia.com/science/encyclopedias-almanacs-transcripts-and-maps/fossil-and-fossilization>
3. <https://palaeobotany.org>

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 50 Marks

Continuous Internal Assessment (CIA): 15 Marks

End Semester Exam (ESE): 35 Marks

Continuous Internal Assessment (CIA): 15 (By Course Teacher)	Internal Test / Quiz-(2): 10 & 10	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 15 Marks
	Assignment/Seminar + Attendance - 05	
	Total Marks - 15	
End Semester Exam (ESE): 30	Laboratory / Field Skill Performance: On spot Assessment	
	A. Performed the Task based on lab. work - 20 Marks	Managed by Course teacher as per lab. status
	B. Spotting based on tools & technology (written) - 10 Marks	
	C. Viva-voce (based on principle/technology) - 05 Marks	

Name and Signature of Convener & Members of CBoS:

① R. Prasad
 ② Dr. S. K. Pandey
 ③ Dr. S. K. Pandey
 ④ Dr. S. K. Pandey
 ⑤ Dr. S. K. Pandey
 ⑥ Dr. S. K. Pandey
 ⑦ Dr. S. K. Pandey
 ⑧ Dr. S. K. Pandey
 ⑨ Dr. S. K. Pandey
 ⑩ Dr. S. K. Pandey

FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)

DEPARTMENT OF BOTANY COURSE CURRICULUM

PART- A: Introduction			
Program: Bachelor in Life Science (Diploma / Degree/Honors)		Semester - III	Session: ²⁰²⁵⁻²⁶ 2024-2025
1	Course Code	BOSE- 01 T	
2	Course Title	Natural resources and management	
3	Course Type	Discipline specific Elective (DSE)	
4	Pre-requisite (if, any)	As per program	
5	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to > Understand natural resources and their sustainable utilization. > Knowledge on land, water, energy, and forest resources. > Students will learn about the practices of natural resource management. > Knowledge on the international and national efforts of natural resource management.	
6	Credit Value	3 Credits	Credit = 15 Hours - learning & Observation
7	Total Marks	Max. Marks: 100	Min Passing Marks: 40
PART -B: Content of the Course			
Total No. of Teaching-learning Periods (01 Hr. per period) - 45 Periods (45 Hours)			
Unit	Topics (Course contents)		No. of Period
I	Natural resources > Definition and types. > Natural resources' conservation Role of an individual in conservation of natural resources, Significance, > Sustainable utilization of resources' : Concept, approaches economic, ecological, and socio-cultural activities.		12
II	Land and freshwater resources > Land as a resource > Soil erosion and desertification > Soil degradation and management. > Forest resources use and over exploitation, deforestation > Water resources, use and overutilization of surface and ground water > Fresh Marine and estuarine ecosystems; > Wetlands threats and management strategies		11
III	Biological Resources > Biodiversity-definition and types > Value of biodiversity > Biodiversity at global, national and regional levels > Threats; Management strategies; > Bioprospecting. IPR; CBD; National Biodiversity Action Plan). > Forests: Cover and its significance (with special reference to India); > Major and minor Forest products; > Renewable and non-renewable sources of energy.		11
IV	Contemporary practices in resource management > National and international efforts in resource management and conservation. > Waste management practices > Natural resource Accounting > Environmental impact assessment EIA > Geographical information System GIS > Participatory Appraisal of natural Resource > Ecological Footprint with emphasis on carbon footprint.		11
Keywords	Resources, Biodiversity, Resources management, IPR, CBD.		

1. Dr. Jyoti
 2. Dr. Ramesh
 3. Dr. S. S.
 4. Dr. S.
 5. Dr. S.
 6. Dr. S.

7. Dr. S.
 8. Dr. S.
 9. Dr. S.
 10. Dr. S.

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

1. Vasudevan, N. (2006). Essentials of Environmental Science. Narosa Publishing House, New Delhi.
2. Singh, J. S., Singh, S.P. and Gupta, S. (2006). Ecology, Environment and Resource Conservation. Anamaya Publications, New Delhi.

Reference Books Recommended –

- 1, Rogers, P.P., Jalal, K.F. and Boyd, J.A. (2008). An Introduction to Sustainable Development. Prentice Hall of India Private Limited, New Delhi.

Online Resources–

- e-Resources / e-books and e-learning portals
- <https://www.sciencedirect.com/topics/social-sciences/natural-resource>
- <https://eaidnbmnnnibpcapcglcfindmkaj/https://egyankosh.ac.in/bitstream/123456789/66166/2/Unit4.pdf>
- https://eaidnbmnnnibpcapcglcfindmkaj/https://www.ers.usda.gov/webdocs/publications/41964/30289_biological.pdf?v=0#:~:text=16-What%20Are%20Biological%20Resources%3F,forests%2C%20and%20other%20natural%20lands.
- <http://surl.li/spedd>
- <https://shorturl.at/ewyLP>
- <https://shorturl.at/cimoF>

Online Resources–

- e-Resources / e-books and e-learning portals
- www.swayam.ac.in
- www.ignou.ac.in
- www.egyankosh.ac.in
- www.iitm.ac.in
- www.eskillindia.org
- www.esniksha.mp.gov.in
- www.vlab.co.in
- www.internshala.com
- www.ndl.iitkgp.ac.in

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks

Continuous Internal Assessment (CIA): 30 Marks

End Semester Exam (ESE): 70 Marks

Continuous Internal Assessment (CIA): 30 (By Course Teacher)	Internal Test / Quiz-(2): 20 +20	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 30 Marks
	Assignment / Seminar - 10	
	Total Marks - 30	
End Semester Exam (ESE): 70	Two section – A & B Section A: Q1. Objective – 10 x1= 10 Mark; Q2. Short answer type- 5x4 = 20 Marks Section B: Descriptive answer type qts., 1out of 2 from each unit-4x10= 40 Marks	

Name and Signature of Convener & Members of CBoS:

① R. K. Singh
② R. K. Singh
③ R. K. Singh
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⑦ R. K. Singh
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FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)

DEPARTMENT OF BOTANY

COURSE CURRICULUM

PART- A: Introduction			
Program: Bachelor in Life Science (Diploma / Degree/ Honors)		Semester - III	Session: 2024-2025 2025-26
1	Course Code	BOSE -01 P	
2	Course Title	Lab course -01 (Natural resources and management)	
3	Course Type	Laboratory course	
4	Pre-requisite (if, any)	As per program	
5	Course Learning Outcomes (CLO)	at the end of then of the sesn - To understand natural resources and their sustainable utilization. - Acquire knowledge on land, water, energy, and forest resources. - Students will learn about the practices of natural resource management. - Acquire knowledge on the international and national efforts of natural resource management.	
6	Credit Value	1 Credits	Credit =30 Hours Laboratory or Field learning/Training
7	Total Marks	Max. Marks: 50	Min Passing Marks: 20
PART -B: Content of the Course			
Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)			
Module	Topics (Course contents)		No. of Period
Lab./Field Training/ Experiment Contents of Course	- To compare protected and unprotected grassland stands using community coefficients - To estimate IVI of the species in a woodland using point centered quarter method. - To find out important grassland species using chi square test. - Scientific visits to a protected area, a wet land, a mangrove, NBPGR, BSI, CSIR, ICAR labs and a recognized botanical gardens or a museum. - To determine diversity indices (Shannon Wiener, concentration of dominance, species richness, equability and B diversity. - Field survey of a part of town or city to make the students aware of the diversity of plants in urban ecosystems. - Estimation of solid waste generated by a domestic system (biodegradable and non biodegradable) and its impact on land degradation. - Collection of data on forest covers of specific area. - Measurement of dominance of woody species by DBH (diameter at breast height) method. - Calculation and analysis of ecological footprint. - Ecological modeling.		30
Keywords	Community coefficient, IVI, diversity indices		

Signature of Convener & Members (CBoS) :

① R. Prasad
② R. Prasad
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⑧ R. Prasad
⑨ R. Prasad
⑩ R. Prasad

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

1. A Handbook of Human Resource Management Practice
2. Environmental and Natural Resource Economics_ A Contemporary Approach
3. Sustainable Management of Natural Resources_ Mathematical Models and Methods (Environmental Science and Engineering Environmental Science)

Online Resources–

➤ e-Resources / e-books and e-learning portals

- 1) <https://shorturl.at/uIMTW>
- 2) <https://shorturl.at/yFJM3>

Online Resources–

➤ e-Resources / e-books and e-learning portals

- www.swayam.ac.in
- www.ignou.ac.in
- www.egyankosh.ac.in
- www.iitm.ac.in
- www.eskillindia.org
- www.eshiksha.mp.gov.in
- www.vlab.co.in
- www.internshala.com
- www.ndl.iitkgp.ac.in

PART-D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 50 Marks

Continuous Internal Assessment (CIA): 15 Marks

End Semester Exam (ESE): 35 Marks

Continuous Internal Assessment (CIA): 15 (By Course Teacher)	Internal Test / Quiz-(2): 10 & 10 Assignment/Seminar +Attendance - 05 Total Marks - 15	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 15 Marks
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End Semester Exam (ESE): 35

Laboratory / Field Skill Performance: On spot Assessment
A. Performed the Task based on lab. work - 20 Marks
B. Spotting based on tools & technology (written) - 10 Marks
C. Viva-voce (based on principle/technology) - 05 Marks

Managed by
Course teacher
as per lab. status

Name and Signature of Convener & Members of CBoS:

- ① R. S. Rao
- ② R. S. Rao
- ③ R. S. Rao
- ④ R. S. Rao
- ⑤ R. S. Rao
- ⑥ R. S. Rao

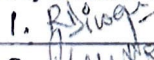
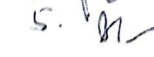
- ⑦ R. S. Rao
- ⑧ R. S. Rao
- ⑨ R. S. Rao
- ⑩ R. S. Rao

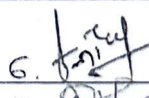
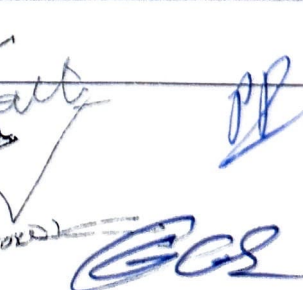
FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)

DEPARTMENT OF BOTANY COURSE CURRICULUM

PART- A: Introduction			
Program: Bachelor in Life sciences (Certificate / Diploma / Degree)		Semester - VIII/V	Session: 2025-26 2024-2025
1	Course Code	BOVAC-01	
2	Course Title	Herbal Plant & Human Health	
3	Course Type	Value Addition Course (BOVAC-01)	
4	Pre-requisite (if, any)	As per program	
5	Course Learning Outcomes (CLO)	After completion of this course, the students will be able to – ➤ Understand the value of herbs, herbal medicine and use of herbal medicine. ➤ Know about botanical medicine professionals in the complementary and alternative medicine (CAM) ➤ Demonstrates the knowledge of the toxicity of plant and essential oil ingredients. ➤ Understand the possibility for allergic and unpleasant reactions to herbal products and the impact of herbal quality on potential toxicity. ➤ Use the herbal plants in their daily life ➤ Adopt the value of herbal medicine to save their health.	
6	Credit Value	2 Credits	Credit = 15 Hours - learning & Observation
7	Total Marks	Max. Marks: 50	Min Passing Marks: 20
PART -B: Content of the Course			
Total No. of Teaching-learning Periods (01 Hr. per period) - 30 Periods (30 Hours)			
Unit	Topics (Course contents)		No. of Period
I	Introduction: Elementary knowledge of Herbal plant and Concept of Herb as medicine. Concept of ethno-medicine, folk medicines, ethno-ecology, ethnic communities of the India & the Chhattisgarh. Concept of Herbal garden. Collection of ethnic information. Observation/In Practices - Survey and familiarization with herbs & local herbal plants		08
II	Importance of medicinal plants: Importance of Herbal / Medicinal plant in human health care – health and balanced diet (Role of proteins, carbohydrates, lipids and vitamins). Common plants & plant parts providing metals and vitamins. Observation/In Practices - Survey and familiarization with local herbal medicinal plants		07
III	Tribal medicine and Traditional knowledge: Introduction, Concept of Tribal medicine, methods of disease diagnosis and treatment – common Plants in folk religion. Traditional knowledge and utility of some medicinal plants in Chhattisgarh. Collection /Identification of Herbal plants commonly used by villagers of the state – • Centella asiatica, • Aloe vera, • Solanum nigrum, • Achyranthus aspera, • Withania somnifera, • Papaver somniferum, • Strychnos nux– vomica, • Atropa belladonna;		08
IV	Plants in day to day life: Nutritive and medicinal value of common herbal fruits and vegetables of daily use. Precautions during use of herbal medicinal products. Basic idea of contribution of national research laboratories like CDRI, CIMAP, NBRI, etc. Collection /Identification of Herbal plants commonly used in daily life - Tulsi, Garlic, Ginger, Turmeric, Ajwain, Methi, Flax, Tea and Coffee.		08
Keywords Herbal medicine. Folk medicine. Ethno-medicine. Tribal medicine			

Signature of Convener & Members (CBoS)

1. 
 2. 
 3. 
 4. 
 5. 

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 7. 
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PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

1. Kumar, N.C. (1993). An Introduction to Medical botany and Pharmacognosy. Emkay Publications, New Delhi.
2. Rao, A.P. (1999). Herbs that heal. Diamond Pocket Books (P) Ltd., New Delhi.
3. Iris F. F. Benzie and Sissi Wachtel-Galor. Herbal Medicine, 2nd edition Biomolecular and Clinical Aspects, CRC Press/Taylor & Francis; 2011
4. Fabrizio Donovan (2020) Medicinal Herbs: The Ultimate Guide to Natural Healing, Learn The Benefits of Herbs and Use the Nature's Most Powerful Medicinal Plants in Making Your Own AZ Remedies to Treat Diseases, Author's Republic.
5. Stargrove Mitchell Bebel ND, Herb, Nutrient, and Drug Interactions, Publisher: Elsevier – Health Sciences Division
6. Iris F. F. Benzie (Editor), Herbal Medicine (Oxidative Stress and Disease) 2nd Edition,

Online Resources–

- e-Resources / e-books and e-learning portals
- www.swayam.ac.in
- www.ignou.ac.in
- www.egvankosh.ac.in
- www.iitm.ac.in
- www.eskillindia.org
- www.eshiksha.mpp.gov.in
- www.vlab.co.in
- www.internshala.com
- www.ndl.iitkgp.ac.in

Online Resources–

- <https://pubmed.ncbi.nlm.nih.gov/22593937/>
- <https://crimsonpublishers.com/acam/pdf/ACAM.000551.pdf>
- https://www.researchgate.net/publication/329823398_Medicinal_Plants_Used_in_the_Treatment_of_Mental_and_Neurological_Disorders_in_Ghana
- <https://www.sciencedirect.com/science/article/abs/pii/S0378874115003013>
- <https://core.ac.uk/download/pdf/143841457.pdf>
- <https://practicalselfreliance.com/medicinal-plants/>
- <https://practicalselfreliance.com/medicinal-plants/>
- <https://www.pdfdrive.com/medicinal-plants-books.html>

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 50 Marks

Continuous Internal Assessment (CIA): 15 Marks

End Semester Exam (ESE): 35 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 10 & 10	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 15 Marks
	Assignment/Seminar +Attendance - 05 Total Marks - 15	
End Semester Exam (ESE):	Two section – A & B	
	Section A: Q1. Objective – 05 x1= 05 Mark; Q2. Short answer type- 5x2 =10 Marks Section B: Descriptive answer type qts., 1out of 2 from each unit- 4x05 =20 Marks	

Name and Signature of Convener & Members of CBoS:

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